Paper Reference 9MT0/41
Pearson Edexcel
Level 3 GCE

Total Marks

Music Technology

Advanced

COMPONENT 4: Producing and Analysing

Thursday 8 June 2023 – Morning

Time: 2 hour 15 minutes plus 10 minutes setting up time.

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

Y75061A

Pearson

YOU MUST HAVE

Pearson audio/MIDI files, headphones or monitor speakers, digital audio workstation (DAW) and MIDI keyboard.

YOU WILL BE GIVEN

Diagram Booklet

SETTING UP TIME

Open a new project in your DAW using 16 bit/44·1 kHz sample rate.

Save the project as 'comp4_your candidate number' (e.g. comp4_1234) in the folder designated by your centre.

Set the metronome to 125 bpm.

(continued on the next page)

Setting up time continued.

Import 'drums.wav' to a new track in your DAW, aligned with the beginning of bar 1.

Ensure that the drums are audible and play in time with the metronome. The drums begin bar 6, beat 2.

You must not open the paper until instructed to do so by the invigilator.

INSTRUCTIONS

Answer ALL questions.

Answer the questions in the spaces provided in this Question Paper or on the separate diagrams – there may be more space than you need.

(continued on the next page)

Instructions continued.

Save your audio files for Questions 2, 3, 4 and 5 within the 2 hour 15 minutes examination time.

You must ensure that the left and right earpieces of your headphones are worn correctly.

Access to a calculator or calculator software is not permitted.

Access to the internet or local network is not permitted.

INFORMATION

The total mark for this paper is 105.

The marks for EACH question are shown in brackets – use this as a guide as to how much time to spend on each question.

There may be spare copies of some diagrams if you need them.

ADVICE

Read each question carefully before you start to answer it.

Try to answer every question.

Check your answers if you have time at the end.

SECTION A

Answer ALL questions. Write your answers in the spaces provided in this Question Paper or on the separate diagrams.

Some questions are multiple choice. Write the letter(s) of your chosen answer(s) in the box(es) provided.

Question 1 is about the drum part.

1. Listen to the drum part you have imported.

   (a) Identify the most appropriate quantise value for the drum part.

   A 1/64

   B 1/32

   C 1/16

   D 1/12

   Answer ☐ (1 mark)

(continued on the next page)

1. continued.

(b) The drums have been EQed with a high shelf boost. Identify which drum timbre would be most affected by this EQ.

A Clap

B Hi–hat

C Kick

D Snare

Answer ☐ (1 mark)

(continued on the next page)

1. continued.

Refer to the diagram for Question 1(c) in the Diagram Booklet.

It shows a piano roll editor.

(c) Draw the drum part for bar **43** on the piano roll editor in the Diagram Booklet. Some drum hits for each timbre have been completed for you.

(5 marks)

(Total for Question 1 = 7 marks)

Question 2 is about the synth fills part.

2. Import the MIDI file ‘synth fills.mid’ to a new track in your DAW. Align the part so that the synth fills begin playing at the start of bar **30**.

   (a) Identify the highest pitch bend value in bar **30**.

   (1 mark)

_____

_____

(continued on the next page)

2. continued.

(b) MIDI controllers usually have a range of 0–127. Pitch bend values have a range between −8192 and 8191. State how pitch bend's greater range of values is achieved within the MIDI specification.

(1 mark)

(continued on the next page)

2. continued.

(c) There are only two different note velocity values used in the MIDI file. Complete the table on page 13 to give the velocity in decimal and in binary of the two different velocity values.
There are four spaces to fill.
(4 marks)

There is a spare copy of this table on page 14 of the Diagram Booklet if you wish to use it.

(continued on the next page)

2. (c) continued.

Velocity in decimal	Velocity in binary

(continued on the next page)

2. continued.

(d) Import ‘synth fills example.wav’ to a new track in your DAW. The file illustrates how bars 33–39 of the synth fills part should sound. You should not use this audio in your final mix.

Create a synth sound that matches the timbre ‘synth fills example.wav’.

(i) Ensure that the octave matches the example. (1 mark)

(continued on the next page)

2. (d) continued.

(ii) Use a square wave.

(1 mark)

(iii) Match the pitch bend range with ‘synth fill example.wav’.

(1 mark)

(iv) Copy the amplitude envelope.

(1 mark)

(continued on the next page)

2. (d) continued.

(v) Copy the velocity sensitive filtering.

(2 marks)

(vi) Copy the modulation effect.

(1 mark)

Bounce/export the completed synth fills part as a single 16 bit/44·1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q2_ your candidate number' (e.g. q2_1234).

(continued on the next page)

2. continued.

Refer to the diagram for Question 2(e)(i) in the Diagram Booklet. It shows a graph.

(e) (i) On the graph, draw a square wave with a period of 1 ms.
(2 marks)

(continued on the next page)

2. (e) continued.

Refer to the diagram for Question 2(e)(ii) in the Diagram Booklet.

It shows a graph.

(ii) On the graph, draw a saw wave one octave lower.

(2 marks)

(Total for Question 2 = 17 marks)

Question 3 is about the bass part and chorus synth part.

3. Import ‘bass.wav’ to a new track in your DAW. The beginning of this audio track should be aligned with the start of bar 1. The bass begins at the start of bar 2.

(continued on the next page)

3. continued.

(a) An effect has been introduced on the bass in bars **6–9**.

(i) Identify the effect.

(1 mark)

_____

_____

(continued on the next page)

3. (a) continued.

(ii) Identify the two parameters that have been automated on this effect.

(2 marks)

1_____

_____

2_____

_____

(continued on the next page)

3. continued.

(b) Pitch bend has been applied to the first note in bar 2. Identify the pitch bend range.

A 1 semitone

B 4 semitones

C 7 semitones

D 12 semitones

Answer ☐ (1 mark)

(continued on the next page)

3. continued.

(c) In bar 26, the amplitude envelope is different. Describe how the amplitude envelope is different to other bars.

(2 marks)

(continued on the next page)

3. continued.

(d) Import ‘chorus synth incomplete.wav’ into your DAW. This is the incomplete chorus synth part. The beginning of this audio track should be aligned with the start of bar 1. The chorus synth begins at the start of bar 38.

Complete the chorus synth part.

- Use audio from ‘chorus synth incomplete.wav’.

(continued on the next page)

3. (d) continued.

- The chorus synth must play in unison with the bass in bars **38–45**.

- Complete the missing notes in bar **38**.

- Complete bar **42**.

- The chorus synth must not have any clicks or glitches.

(9 marks)

(continued on the next page)

3. (d) continued.

Bounce/export the completed chorus synth part as a single 16 bit/44·1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q3_ your candidate number' (e.g. q3_1234).

(continued on the next page)

3. continued.

(e) Refer to the diagram for Question 3(e) in the Diagram Booklet.

It shows a VU meter.

(i) Using the dB scale, identify the level shown in the diagram.

(1 mark)

_____

_____

(continued on the next page)

3. (e) continued.

(ii) State why the numbers on the dB scale are not evenly spaced.

(1 mark)

3. (e) continued.

(iii) Describe why RMS metering is not suitable to prevent clipping.

(2 marks)

(Total for Question 3 = 19 marks)

Question 4 is about the lead vocal part and backing vocal part.

4. Import ‘lead vocal.wav’ to a new track in your DAW. This track is the lead vocal part with a backing vocal in bar 43. Ensure that the beginning of this audio track is aligned with the start of bar 1. The vocal begins bar 2, beat 2.

(continued on the next page)

4. continued.

Refer to the diagram for Question 4(a)(i) and 4(a)(ii) in the Diagram Booklet.

(a) Pitch correction has been used on the lead vocal throughout.

(i) On the picture in the Diagram Booklet, draw the knob position for the response time.
(1 mark)

(continued on the next page)

4. (a) continued.

(ii) A custom scale of six notes has been used to restrict the pitches the pitch correction will tune to. Two of the notes have been given: **E** and **B**. Draw the other four notes on the picture in the Diagram Booklet.

(4 marks)

(continued on the next page)

4. continued.

(b) Create a harmonised backing vocal track in bar **39**.

- "dance floor" should be harmonised with a backing vocal singing the same words.

- The backing vocal should be in rhythmic unison with the lead vocal.

- The pitches should match the backing vocal in bar **43**.

(5 marks)

(continued on the next page)

4. (b) continued.

Bounce/export the completed lead vocal and backing vocal part as a single 16 bit/44·1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q4_ your candidate number' (e.g. q4_1234).

(continued on the next page)

4. continued.

Refer to the diagram for Question 4(c) in the Diagram Booklet.

It shows the switch settings on a microphone.

(c) The vocals were recorded with a condenser microphone. The switch settings shown in the picture are all unsuitable for recording this type of vocal.

Discuss why the switch settings would be unsuitable for a lead vocal in a pop song.

(8 marks)

Answer lines are on the next

four pages.

4. (c) continued.

4. (c) continued.

4. (c) continued.

4. (c) continued.

(Total for Question 4 = 18 marks)

5. You should now have the following tracks in your DAW: drums, synth fills, bass, chorus synth, lead vocal and backing vocal.

   (a) In the lead vocal, remove the breath and lip noise between the words “stop” and “Let’s” in bars 31–32.
   (2 marks)

(continued on the next page)

5. continued.

(b) Apply automated panning to the riser effect in the drum part in bar 25.

- The riser effect should move smoothly across the stereo field from left to right.

- Only bar 25 of the drum track should be affected by automated panning.

(3 marks)

(continued on the next page)

5. continued.

(c) Listen to the lead vocal effect beginning from bar 9, beat 4 on the first two phrases, “I know you took my heart onto the dance floor, spun around dancing like I’ve never seen before.” Recreate the same effect from bar 13, beat 4 until the end of the song.

(3 marks)

(continued on the next page)

5. continued.

(d) Listen to the delay in bar 19 on the lead vocal. Recreate the same delay on “wish for” in bar 23.

(3 marks)

(continued on the next page)

5. continued.

(e) Gate the lead vocal.

- Only “You better show me what you can do” in bars 36–37 should be affected.

- The drum track should trigger the side chain of the gate so that the lead vocal stutters in time with the clap and hi–hat.

(3 marks)

(continued on the next page)

5. continued.

(f) Listen to the automated vocal reverb in bars 6–9. Recreate the same reverb during bars 2–5.

(4 marks)

(g) Balance the levels of the mix.

(3 marks)

(h) Produce a final stereo mix.

- Ensure that the mix output is at as high a level as possible.

(continued on the next page)

5. (h) continued.

- It should be free from distortion.

- Do not limit or compress the mix output.

- Ensure that the beginning and the end of the music are not cut off.

- Ensure that silences at the beginning and at the end do not exceed one second.

(3 marks)

(continued on the next page)

5. continued.

Bounce/export the completed mix as a single 16 bit/44·1 kHz stereo .wav file to the designated folder on your computer.

Name it 'q5_ your candidate number' (e.g. q5_1234).

(Total for Question 5 = 24 marks)

TOTAL FOR SECTION A = 85 MARKS

SECTION B

Answer Question 6. Write your answer in the space provided in this Question Paper.

6. Refer to the diagram for Question 6 in the Diagram Booklet. It shows compressor, EQ and delay plug–in inserts for a rock lead vocal. The final mix will also include bass guitar, distorted electric guitar and drums. The tempo of the song is **120 bpm**.

Evaluate the suitability of the plug–in settings for a rock recording.

(20 marks)

Answer lines continue on the next ten pages.

6. continued.

6. continued.

6. continued.

6. continued.

6. continued.

6. continued.

6. continued.

6. continued.

6. continued.

6. continued.

(Total for Question 6 = 20 marks)

TOTAL FOR SECTION B = 20 MARKS
TOTAL FOR PAPER = 105 MARKS
END OF PAPER